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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MOORE, KARLA A

ART UNIT PAPER NUMBER

1763

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,422

Applicant(s)

TANAKA ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-22 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-18, 20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/897,930.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0404</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 14-18 and 20-21, drawn to a substrate processing system, classified in class 118, subclass 719.
 - II. Claims 19 and 22, drawn to a device manufacturing method, classified in class 430.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, such as one not comprising developing the exposed substrate using a developer.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Scott Alpe on 27 April 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 14-18 and 20-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19 and 22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 14-18 and 20-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 14-18 and 20-21 recite the limitation "a gas supply mechanism which supplies *the* first gas and *the* second gas to the load-lock chamber". There is insufficient antecedent basis for this limitation in the claim. The claims do not previously refer to a first and a second gas. Examiner has interpreted the limitation as "a gas supply mechanism which supplies a first gas and a second gas to the load lock chamber". Examiner notes that a first gas atmosphere and a first gas or a second gas atmosphere and a second gas are not the same thing.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,455,082 to Saito et al.
11. Saito et al. disclose a load lock chamber having a transfer path between a first gas atmosphere and a second gas atmosphere, the load lock chamber comprising: a first gate valve (Figure 15, G2) through which the substrate is transferred between the first gas atmosphere (internal atmosphere of a process chamber) and the load lock chamber; a second gate valve (G1) through which a substrate is transferred between the second gas atmosphere (outer air atmosphere) and the load lock chamber; and a

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gas supply mechanism (403) which supplies a first gas and a second gas to the load lock chamber, wherein the gas supply mechanism is arranged to supply the second gas to the load lock chamber when the first gate valve is closed and the second valve is opened during the substrate being transferred between the second atmosphere and the load lock chamber (see column 14, rows 56-66).

12. With respect to claim 17, Saito et al. also disclose a load lock chamber having a transfer path between a first gas atmosphere and a second gas atmosphere, the load lock chamber comprising: a first gate valve (Figure 15, G2) through which the substrate is transferred between the first gas atmosphere (internal atmosphere of a process chamber) and the load lock chamber; a second gate valve (G1) through which a substrate is transferred between the second gas atmosphere (outer air atmosphere) and the load lock chamber; and a gas supply mechanism (403) which supplies a first gas and a second gas to the load lock chamber, wherein the gas supply mechanism is arranged to supply the second gas to the load lock chamber when the first gate valve is closed and the second valve is opened during the substrate being transferred between the second atmosphere and the load lock chamber (see column 14, rows 56-66); and a processing device adapted to process the substrate in the first gas atmosphere (see column 14, rows 15-22).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

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each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 15-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,455,082 to Saito et al. in view of U.S. Patent No. 4,792,378 to Rose et al.

16. Saito et al. disclose a load lock chamber (Figure 15, 401) having a substrate transfer path between a first gas atmosphere and a second gas atmosphere substantially as claimed, the load lock chamber comprising: a gas supply pipe (403) which supplies a first gas and a second gas to the load lock chamber.

17. However, Saito et al. fail to teach a straightening plate provided at an entire upper portion of an interior space of the load lock chamber to cause the flow of the first gas and the second gas supplied through the gas supply pipe to be uniform.

18. Rose et al. disclose the use of a metallic gas straightening plate (Figure 1, 20) provided at an entire upper portion of a chamber for the purpose of providing a rigid structure that can achieve uniform dispersal of a gas (column 3, row 61 through column 4, row 3).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a metallic gas straightening plate at an entire upper portion of the chamber in Saito et al. in order to provide a rigid structure capable of achieving uniform dispersal of a gas as taught by Rose et al.

20. With respect to claim 16, the straightening plate comprises a metal plate with a plurality of perforations formed therein (column 3, row 61 through column 4, row 3).

21. Further, Saito et al. disclose a processing device adapted to process the substrate in the first gas atmosphere (see column 14, rows 15-22), as recited in claim 20.

22. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,455,082 to Saito et al. in view of U.S. Patent No. 5,981,399 to Kawamura et al.

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23. Saito et al. also disclose a processing system substantially as claimed and comprising: a load lock chamber (Figure 15, 401) having a substrate transfer path between a first gas atmosphere and a second gas atmosphere, the load lock chamber including: a first gate valve (Figure 15, G2) through which the substrate is transferred between the first gas atmosphere (internal atmosphere of a process chamber) and the load lock chamber; a second gate valve (G1) through which a substrate is transferred between the second gas atmosphere (outer air atmosphere) and the load lock chamber; and a gas supply mechanism (403) which supplies a first gas and a second gas to the load lock chamber, wherein the gas supply mechanism is arranged to supply the second gas to the load lock chamber when the first gate valve is closed and the second valve is opened during the substrate being transferred between the second atmosphere and the load lock chamber (see column 14, rows 56-66); and a processing device adapted to process the substrate in the first gas atmosphere (see column 14, rows 15-22).

24. However, Saito et al. fail to teach an exposure device adapted to expose the substrate in the first gas atmosphere.

25. Kawamura et al. teach a multi-processing system provided with multiple process chambers (for example an exposure chamber) laid out to surround a transfer chamber so that various processes are implemented in ambient conditions isolated from the atmosphere with the intention of preventing the contamination of substrate surface and improving the quality of semiconductor devices (column 1, rows 13-21).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an exposure process chamber as one of the processing chambers in Saito et al. in order to perform a known semiconductor process in ambient conditions isolated from the atmosphere with the intention of preventing the contamination of substrate surface and improving quality of semiconductor devices as taught by Kawamura et al.

27. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,455,082 to Saito et al. in view of U.S. Patent No. 4,792,378 to Rose et al. and U.S. Patent No. 5,981,399 to Kawamura et al.

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28. Saito et al. disclose a processing system substantially as claimed and comprising: load lock chamber (Figure 15, 401) having a substrate transfer path between a first gas atmosphere and a second gas atmosphere substantially as claimed, the load lock chamber comprising: a gas supply pipe (403) which supplies a first gas and a second gas to the load lock chamber. Further, Saito et al. disclose a processing device adapted to process the substrate in the first gas atmosphere (see column 14, rows 15-22).

29. However, Saito et al. fail to teach a straightening plate provided at an entire upper portion of an interior space of the load lock chamber to cause the flow of the first gas and the second gas supplied through the gas supply pipe to be uniform.

30. Rose et al. disclose the use of a metallic gas straightening plate (Figure 1, 20) provided at an entire upper portion of a chamber for the purpose of providing a rigid structure that can achieve uniform dispersal of a gas (column 3, row 61 through column 4, row 3).

31. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a metallic gas straightening plate at an entire upper portion of the chamber in Saito et al. in order to provide a rigid structure capable of achieving uniform dispersal of a gas as taught by Rose et al.

32. Saito et al. further fail to teach an exposure device adapted to expose the substrate in the first gas atmosphere.

33. Kawamura et al. teach a multi-processing system provided with multiple process chambers (for example an exposure chamber) laid out to surround a transfer chamber so that various processes are implemented in ambient conditions isolated from the atmosphere with the intention of preventing the contamination of substrate surface and improving the quality of semiconductor devices (column 1, rows 13-21).

34. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an exposure process chamber as one of the processing chambers in Saito et al. in order to perform a known semiconductor process in ambient conditions isolated from the

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atmosphere with the intention of preventing the contamination of substrate surface and improving quality of semiconductor devices as taught by Kawamura et al.

Conclusion

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP Patent No. 01-050414 A to Ito et al.; USP 4,824,545 to Arnold et al.; USP 5,795,399 to Hasegawa et al.; and USP 6,074,202 to Yagi et al. each disclose load lock chambers with gas supply mechanisms and associated transfer methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore
Patent Examiner
Art Unit 1763
April 29, 2005